IN THE CLAIMS

Please amend the claims as follows:

1. (Previously Presented) A semiconductor structure, comprising:

a monocrystalline silicon substrate;

an amorphous oxide material in contact with the monocrystalline silicon substrate;

a monocrystalline metal oxide selected from the group consisting of alkaline earth metal titanates, alkaline earth metal zirconates, alkaline earth metal hafnates, alkaline earth metal tantalates, alkaline earth metal ruthenates, alkaline earth metal niobates, alkaline earth metal vanadates, alkaline earth metal tin-based perovskites, lanthanum aluminate, lanthanum scandium oxide, gadolinium oxide and mixtures thereof contacting the amorphous oxide material;

a first monocrystalline compound semiconductor material overlying the monocrystalline metal oxide material;

a microcavity semiconductor laser formed at least partially of said monocrystalline compound semiconductor material; and

a waveguide overlying said microcavity semiconductor laser.

2. (Original) The semiconductor structure of Claim 1, wherein said waveguide overlying said microcavity semiconductor laser is optically coupled to said microcavity semiconductor laser.

3. (Original) The semiconductor structure of Claim 1, wherein said waveguide overlying said microcavity semiconductor laser is optically coupled to said microcavity semiconductor laser with an evanescent wave coupling.

4. (Original) The semiconductor structure of Claim 1, wherein said waveguide is formed at least partially from a second monocrystalline compound semiconductor material.

5. (Original) The semiconductor structure of Claim 4, wherein said second monocrystalline compound semiconductor material is substantially the same as said first monocrystalline compound semiconductor material.

6. (Original) The semiconductor structure of Claim 1, wherein said microcavity semiconductor laser comprises an elliptical cross-sectional periphery.

7. (Original) The semiconductor structure of Claim 6, wherein said elliptical cross-sectional periphery comprises a circular cross-sectional periphery.

8. (Original) The semiconductor structure of Claim 1, wherein said microcavity semiconductor laser comprises a microcavity semiconductor ring laser.

9. (Original) The semiconductor structure of Claim 1, wherein said microcavity semiconductor laser comprises a microcavity semiconductor disk laser.

10. (Original) The semiconductor structure of Claim 1, wherein said microcavity semiconductor laser comprises a distorted microcavity semiconductor ring laser.

11. (Original) The semiconductor structure of Claim 1, wherein said microcavity semiconductor laser comprises a distorted microcavity semiconductor disk laser.

12. (Original) The semiconductor structure of Claim 1, wherein said first monocrystalline compound semiconductor material forms an active lasing medium.

13. (Original) The semiconductor structure of Claim 12, wherein said active lasing medium supports resonant modes having wavelengths compatible with a radial dimension of the microcavity semiconductor laser.

14. (Original) The semiconductor structure of Claim 12, wherein said active lasing medium enables circulation of said plurality of photons about a periphery of said microcavity semiconductor laser in a manner capable of producing stimulated emission of radiation that generates a second plurality of photons capable of forming a lasing field within said active lasing medium.

15. (Original) The semiconductor structure of Claim 12, wherein said active lasing medium comprises a relatively high refractive index medium that is substantially surrounded by a relatively low refractive index medium.

16. (Original) The semiconductor structure of Claim 15, wherein said relatively high refractive index medium has a refractive index that is greater than approximately 2.5.

17. (Original) The semiconductor structure of Claim 15, wherein said relatively low refractive index medium has a refractive index that is less than approximately 2.0.

18. (Original) The semiconductor structure of Claim 15, wherein the ratio of the refractive indices of said relatively high refractive index medium and said relatively low refractive index medium is greater than approximately 1.3.

19. (Previously Presented) The semiconductor structure of Claim 12, wherein said active lasing medium comprises a first cladding layer overlying said monocrystalline metal oxide material.

20. (Original) The semiconductor structure of Claim 19, wherein said active lasing medium comprises an active layer overlying said first cladding layer.

21. (Original) The semiconductor structure of Claim 12, wherein said active lasing medium comprises of an active layer.

22. (Original) The semiconductor structure of Claim 21, wherein said active lasing medium comprises of a second cladding layer overlying said active layer.

23. (Original) The semiconductor structure of Claim 21, wherein said active layer comprises a quantum well.

24. (Original) The semiconductor structure of Claim 21, wherein said active layer comprises a plurality of quantum wells.

25. (Original) The semiconductor structure of Claim 21, wherein said active layer comprises a quantum well barrier layer.

26. (Previously Presented) The semiconductor structure of Claim 12, wherein said active lasing medium comprises a first cladding layer disposed between a first guiding layer and said monocrystalline metal oxide material.

27. (Original) The semiconductor structure of Claim 26, wherein said active lasing medium comprises a second guiding layer disposed between an active layer and a second cladding layer.

28. (Original) The semiconductor structure of Claim 1, wherein said monocrystalline compound semiconductor material comprises gallium arsenide (GaAs).

29. (Original) The semiconductor structure of Claim 1, wherein said monocrystalline compound semiconductor material comprises indium phosphide (InP)

30. (Original) The semiconductor structure of Claim 1, wherein said waveguide is coupled to said microcavity semiconductor laser with evanescent wave coupling at a segment of said microcavity semiconductor laser.

31. (Previously Presented) The semiconductor structure of Claim 1, wherein said microcavity semiconductor laser comprises:

a first cladding layer overlying said monocrystalline metal oxide material;

a first guiding layer overlying said first cladding layer;

an active layer overlying said first guiding layer;

a second guiding layer overlying said active layer; and

a second cladding layer overlying said second guiding layer.

32. (Original) The semiconductor structure of Claim 31, wherein said waveguide comprises a third cladding layer overlying said second cladding layer.

33. (Original) The semiconductor structure of Claim 32, wherein said waveguide comprises a third guiding layer overlying said third cladding layer.

34. (Original) The semiconductor structure of Claim 33, wherein said waveguide comprises a fourth guiding layer overlying said third guiding layer.

35. (Original) The semiconductor structure of Claim 33, wherein said waveguide comprises a second active layer overlying said third guiding layer.

36. (Original) The semiconductor structure of Claim 34, wherein said waveguide comprises a fourth cladding layer overlying said fourth guiding layer.

37. (Original) An electro-optical integrated circuit comprising the semiconductor structure of claim 1 for intra integrated circuit information communication.

38. (Original) An electro-optical integrated circuit comprising the semiconductor structure of claim 1 for inter integrated circuit information communication.

39. (Original) An electro-optic network node comprising the semiconductor structure of claim 1.

40. (Previously Presented) A semiconductor laser system, comprising:

a monocrystalline silicon substrate;

an amorphous oxide material overlying in contact with the monocrystalline silicon substrate;

a monocrystalline metal oxide selected from the group consisting of alkaline earth metal titanates, alkaline earth metal zirconates, alkaline earth metal hafnates, alkaline earth metal tantalates, alkaline earth metal ruthenates, alkaline earth metal niobates, alkaline earth metal vanadates, alkaline earth metal tin-based perovskites, lanthanum aluminate, lanthanum scandium oxide, gadolinium oxide and mixtures thereof contacting the amorphous oxide material;

a monocrystalline compound semiconductor material overlying the monocrystalline metal oxide material; and

a plurality of microcavity semiconductor lasers formed at least partly from said monocrystalline compound semiconductor material;

a plurality of waveguides overlying said plurality of microcavity semiconductor lasers, said plurality of waveguides optically coupled to said plurality of semiconductor lasers with an evanescent wave coupling.

41. (Original) The semiconductor laser system of Claim 40, further comprising a plurality of optic cables coupled to said plurality of waveguides.

42. (Original) The semiconductor laser system of Claim 40, further comprising a control circuit connected to at least one of said plurality of microcavity semiconductor lasers and configured to control said at least one of said plurality of microcavity semiconductor lasers.

43. (Original) The semiconductor laser system of Claim 42 further comprising a second control circuit.

44. (Original) An electro-optical integrated circuit comprising the semiconductor structure of claim 40 for inter integrated circuit information communication.

45. (Original) An electro-optic network node comprising the semiconductor structure of claim 40.